MODIS Technical Team Meeting
Thursday, July 19, 2001
3:00 PM

Vince Salomonson chaired the meeting. Present were Chris Justice, Eric Vermote, Jack Xiong, Ed Masuoka, Bill Barnes, Bruce Ramsay, Dorothy Hall, Barbara Conboy, Steve Kempler, and Skip Reber, with Rebecca Lindsey taking the minutes.

1.0 Schedule of Upcoming Events

- ESIP Federation Meeting — July 24-26, 2001
  University of North Dakota, Grand Forks
- MODIS Science Team Meeting — September 24-26, 2001
  Location: BWI Marriott

2.0 Meeting Minutes

2.1 General Discussion

Justice commented that he had heard of a discussion about NOAA doing operational processing of MODIS data supported out of the NPP project. Ramsay responded that NESDIS views the opportunity presented by the operational use of MODIS data as both a means to provide high quality data and imagery to NWS and other customers and as a risk reduction effort in anticipation of NOPP-NPOES. Justice said he was aware of that, but he thought that there might be something more in the works, for example, a plan to distribute the data to a user community. He suggested that the MODIS team would need to be aware of any such plans to avoid any confusion among the community about having two seemingly different kinds of MODIS products. Ramsay indicated that the MODIS software used by NOAA was provided, and is continually updated by NASA. Ramsay also indicated that there is an informal agreement in place for NOAA to clear NOAA-produced MODIS products through a NASA-identified point of contact on each of the three science teams, i.e. Land, Oceans, and Atmosphere.

Masuoka reported that MCST had done the procurement for 64 processors for NOAA to process MODIS data, and Ramsay indicated that the purpose of the earmarked money was to move from operational MODIS production over the CONUS to global production for use by NOAA, NWS and public users as well. Masuoka pointed out that one possible difference between our products and NOAA's would be that NOAA's production is near real time, i.e., within three hours of data ingest, and so they wouldn't necessarily wait for "next week's" ancillary data.

Kempler asked if this issue they were discussing was the same as the preparation for a long-term archive? Ramsay indicated that it was not, however, he said he had no recent update on the NOAA / National Climatic Data Center (NCDC) effort to experimentally size the MODIS data stream in possible anticipation of archiving some portion of MODIS data at NCDC.

2.2 Instrument Update (provided via email by Mike Roberto.)

PFM

The MODIS instrument continues to operate with power supply 1 and side A loads. There have been no Formatter events since July 3. To date, the MODIS instrument failure is still believed to have been caused by one of the down regulator MOSFETS becoming lossy. The voltage regulation circuitry would have compensated for this by reducing the duty cycle of the other MOSFET until it reached its minimum duty cycle, and then the voltage would have increased until the over voltage protection shut down the power supply.

The Goddard and Raytheon teams are continuing the investigation of the shutdown of power supply 2 on the Protoflight Model MODIS on June 15. Mitch Davis is leading a group of engineers who are taking a more detailed look at the failure of the power supply and any possible implications for the power supply loads and the Flight Model 1 MODIS instrument which is in spacecraft level integration and test. This work involves bread board work by Art Ruitberg for the down regulator and Pspice modeling by John McCloskey. One goal is to determine if there is any possibility that during actual operations any of the components are being over stressed. Henning Leidecker is looking into the specifics of the MOSFETs based on manufacturer and lot date codes. John Burke from Aerospace is supporting this power supply effort.

The Raytheon / Santa Barbara Remote Sensing effort is being led by Jim Kane and Roger Drake. Raytheon is providing schematics and other information as needed. Terry Cafferty of Raytheon is doing a simplified transient thermal analysis, which will provide expected temperatures at the down regulator temperature sensor during the failure as a function of time.

During the recovery effort, command processor B failed on two separate operating sequences. The first time the processor worked properly for several seconds. A few days later, the second attempt resulted in the processor working properly for several minutes. Joe Auchter of Raytheon has analyzed the telemetry up to the moment of failure and it is consistent

with watch dog timer resets. Chad Salo, the head of the MODIS Instrument Operations Team, provided information that the various check sums indicate the computer code was correct. The command processor B failures will be considered in deciding whether or not to automate switching to command processor B, if necessary, before it has a chance to cool down.

(End of Roberto's report)

Barnes reported that initial concerns about out of family response from Bands 1 and 2 on FM1 have been put to rest, and the Bands are OK. Barnes reported that they want to remove the SDSM from FM1 and change the aperture. The spacecraft will be going into the thermal vacuum chamber next week, and so we will have to do the fix after that. We will have to demonstrate the necessity of the change to the Project, and will make the argument that it is our prime calibration device.

With respect to the PFM shut down, Barnes commented that we have been using side B LUTs for all the data processed since the instrument came up on July 2. There is a 5% off set on all the bands as compared to the new configuration, using the A-side, so all our L1 data is off. MCST will have new LUTs within a week or two (August 1), and at some point we will have to recalibrate that month. In addition to the data lost while the instrument was down, we will lose all data from thermal bands from two days after we came back up.

He indicated that Chris Moeller pointed out that if we go back to B-side components, we would have three different configurations within our consistent year data set that would have to be examined for consistency, either to say there is no difference, or to quantify the difference. That will probably be the responsibility of the L2 investigators.

Salomonson said that whether we go back to B-side depends on how accepting the project is of the idea. Barnes said that of course, we will want to make sure that the parts on the B-side didn't cause the power supply to fail, otherwise we could ruin both power supplies by taking it back to B-side. A team of engineers is examining telemetry with great care, looking for evidence that would help them make that decision. They will report in about a month. In the meantime, Xiong's team is working on A-side LUTs.

Salomonson said that Bob Evans told him that their team looked at the data before the heaters were turned on, and there was little if any noise. Xiong said that it is true that each time you turn the heater on, it draws a

lot of current, and it impacts the electronics. If ADC clamp voltage is not stable then data coming out from ADC will also be affected. Xiong indicated they would look at the data they have processed for the ADC histogram and make sure they are looking at the same data that Miami was. Xiong reported that all signal to noise ratios and detector responses are within specification since the instrument came back up.

2.3 Data Processing

Salomonson passed around a request submitted by the Oceans group to update the processing for oceans in the current stream. It appears that if these changes are implemented, they are pushing the .25° error mark for SST, and for ocean color they get rid of striping and zippers. Ed has said that he thinks he can put the changes in now, and then go back at the end of the consistent year processing and remake the first part of the forward stream. Salomonson indicated he was going to approve the change.

Justice commented that it is good to make these decisions on a product-by-product basis, and to think about the effect of changes on the user community. Some products will be more important to keep consistent than others, for example the VI, others less so, for example, land cover.

Masuoka suggested that Salomonson forward the Oceans request on to other disciplines to use as a template.

Salomonson commented that the gist of the previous day's PI processing meeting was that we needed to be doing everything we could to get MODAPS caught up. He had originally made a suggestion that perhaps they should stop the “real-time” stream, as it makes no sense to process data that is coming from the instrument now since it has the wrong LUTs. Barnes reminded them that the new LUTs would be available in a week or two and they might not want to disturb the system for such a small time gain.

Masuoka said that the DAAC will push data from the archive to MODAPS as fast as it can without impacting its own processing, since the retrievals compete with the forward processing to a certain extent. Kempler indicated that he would advise Gary Alcott to coordinate with MODAPS and match their X-rate as best they can without impacting DAAC production adversely.

Kempler reported that EDOS is delivering truncated files and repeated files. This has happened since the instrument problem and switch over to

A-side, which could be coincidental, but he doesn't know for sure. He also reported that the new version is ECS is up and running.

Salomonson expressed concern about the fragility of our data processing system. It seems that a situation exists in which everything has to work perfectly all the time to keep things going. This appears to be an unrealistic expectation for this system. Justice said that until we have a test system that can test things off line, we would always be in this position.

Kempler said that with respect to MODIS data access, he felt that we might need to blitz the community to really let them know we are here, and we have data and information they need. As far as the DAAC is concerned, subsetting and subsampling are priorities, and he indicated that he needed to talk with Robert Wolfe about getting the Land subsetting code into the DAAC.

Masuoka reported that they had been talking about accelerating production at the DAAC to do the "day 64-forward" processing (the first segment of the reprocessing stream). As of the last time they produced the status chart, the DAAC had done through day 85. LST is the pacing item. Essentially they are in step with the DAAC for the reprocessing stream. The bad news is that the time period they are pushing to finish is not from the growing season, but it may be good for snow. The MODAPS forward stream (i.e., from day 144 onward) is working on week of 152. This past week, MODAPS pushed 300 GB/day to EDC DAAC, about 120 to GES DAAC, and a smaller amount to NSIDC.

2.4 EOSDIS Update

Reber reminded the group of the materials that he and his team had gotten together several weeks ago for Jack Kaye about an overguide funding request. That request was refused. They did, however, get some additional funding from Dolly Perkins that will help.

Justice asked Reber if he had heard any discussion about a tools workshop that was recommended at the SWAMP. Reber said not that he had heard.

2.5 NOAA-NESDIS

Ramsay reported that Gene Legg, OSDPD, announced that the procurement for the 1gigabit dark fiber link between Goddard, Suitland, and Camp Springs was moving forward and the new communications system would be installed in about one year.

2.6 MAST Update

Hall asked Conboy about the lithographs that had been discussed some time ago, and said that they might be a neat way to advertise MODIS data products. She wondered if they were still in the works. Conboy indicated that Lindsey had been working on them. Lindsey said that MAST was currently working with a teacher intern to work up some educational lithographs, which have a MODIS picture on the front, a brief description of the image, and then some classroom educational activities. The lithographs are targeted to teachers, not potential data users. Lindsey said it ought to be possible to use some of the same images and modify the text on the back to target additional audiences.

Conboy reported that the online registration for the Science Team Meeting is ready and she will be sending around an email soon. Salomonson reminded the group to address the strategic science questions in their presentations.

2.7 Conclusion
Salomonson informed the group that Hall has a new educational video out on snow, and that is quite good. Hall said she would bring it to the Tech Team meeting when it was available.

3.0 Action Items

3.1 Discipline leads to meet to resolve the issue of beta-release code and science-quality code, and what we need to say about it.

Status: Open.

3.2 Technical team to discuss further the issue of predicted ephemeris data and how to improve it.

Status: Open.